

33

-- In one embodiment where there is no implanting step (i.e., hydrogen implant), the embrittled region is not formed. The strained silicon layer 104 is transferred to the SOI wafer 401 by a bonded-etchback process on the silicon wafer 101 and the strained SiGe 104. this gives the strained silicon film on the SOI wafer 401.--

IN THE CLAIMS

Following is a complete set of claims as amended with this response, which includes amendments to claims 14-19, and adds new claims 20-33.

CLEAN VERSION OF THE ENTIRE SET OF CLAIMS

What is claimed is:

33

1 14. (AMENDED) A device comprising:
2 a silicon layer;
3 a relaxed layer; and
4 a strained silicon layer in contact with the relaxed layer, the strained silicon layer to
5 be transferred to top of a wafer by a heat treatment, the wafer having a base substrate and
6 an oxidized film.

1 15. (AMENDED) The device of claim 14 further comprising an embrittled
2 region.

1 16. (AMENDED) The device of claim 15 wherein the embrittled region is
2 created by an ion implantation.

1 17. (AMENDED) A device comprising:
2 a silicon layer;
3 a SiO₂ layer in contact with the silicon layer; and

4 a strained silicon layer on top of the SiO₂ layer, the strained silicon layer being
5 transferred from a wafer, the wafer having a stack structure of a base substrate and a layer
6 of relaxed film.

1 18. (AMENDED) The device of claim 17 wherein the relaxed film is a relaxed
2 SiGe layer.

1 19. (AMENDED) The device of claim 18 wherein the wafer further comprises
2 an embrittled region.

1 20. (NEW) The device of claim 17 wherein the strained silicon layer is
2 transferred to top of the SiO₂ layer by a bonded-etch back process.

1 21. (NEW) The device of claim 17 wherein the base substrate is a silicon layer.

1 22. (NEW) The device of claim 17 wherein the heat treatment uses a
2 temperature range of approximately 400°C to 600°C.

1 23. (NEW) The device of claim 14 wherein the relaxed layer is a relaxed SiGe
2 layer.

1 24. (NEW) The device of claim 23 wherein the relaxed SiGe layer has a
2 thickness ranging from 0.1um to 3.0um.

1 25. (NEW) The device of claim 16 wherein the ion implantation uses an energy
2 range of approximately 1keV to 20keV.

1 26. (NEW) The device of claim 16 wherein the ion implantation uses a dose
2 range of approximately 1E116/cm³ to 1E18/cm³.

1 27. (NEW) The device of claim 16 wherein the ion implantation uses hydrogen
2 ions.

1 28. (NEW) A wafer structure comprising:
2 a first wafer having a first base substrate, a relaxed film layer, and a strained film
3 layer; and
4 a second wafer having a second base substrate and an oxidized film layer, the
5 second wafer being bonded to the first wafer by a fire heat treatment, the strained film layer
6 being transferred to the second wafer after the second wafer is separated from the first
7 wafer by a second heat treatment.

1 29. (NEW) The wafer structure of claim 28 wherein one of the first and second
2 base substrates is a silicon layer.

1 30. (NEW) The wafer structure of claim 28 wherein the relaxed film is a
2 relaxed SiGe layer.

1 31. (NEW) The wafer structure of claim 28 wherein the strained film layer is a
2 strained silicon layer.

1 32. (NEW) The wafer structure of claim 28 wherein the first heat treatment
2 uses a temperature range of approximately 100°C to 300°C.

1 33. (NEW) The wafer structure of claim 28 wherein the second heat treatment
2 uses a temperature range of approximately 400°C to 600°C.